able reason appears to have escaped the attention of the authorities.

The mortality which has acquired the popular name of "Isle of Wight" disease from the fact that it was first observed about twelve years ago in that island and for some time was practically confined to it, is in reality not so much a disease as a group of diseases, all of which are fatal and produce the same macroscopic symptoms in the affected insect. The condition known as "crawling"—that is, the inability, more or less pronounced, to fly in spite of desperate efforts—the distortion of the wings, the fæcal discharge known as "dysentery," the dwindling of the numbers of the worker bees, and their sudden and apparently unaccountable death in large numbers are considered by the average bee-keeper to justify him in declaring his bees affected with "Isle of Wight" disease, but none of these symptoms are truly diagnostic.

The honey bee, as was pointed out in an article in NATURE of March 2, 1916, has singularly little power of expression, and the writer of the present article has observed the distortion of the wings at one time supposed to be characteristic of the disease in an apparently healthy bee killed in an entomologist's "killing bottle." Some, if not all, of the symptoms referred to may be present whenever bees die of a virulent disease, while there are at least three natural agencies, and possibly more, which cause the "sudden death of bees in large numbers," which Zander[1] says is the most obvious way by which bee disease can be determined. These agencies are (a) *Nosema apis*, (b) amœboid parasites, and (c) certain yeasts present in fermenting pollen.

The first of these alone causes microsporidiosis, the true infectious "Isle of Wight" disease, but the outcome of the confusion of all these maladies under one name has been a vast amount of loose talk and unscientific remedies, to use no harsher term. A preparation of coal tar, a combination of several germicides, hydrogen peroxide, sulphate of quinine, and even pea-flour have all been put forward as sovereign remedies and extensively sold to distracted beekeepers. Confident claims that this or that race of bees is immune to the disease have been put forward from time to time, and well-meaning but wholly unscientific attempts have been made to resuscitate the waning industry in places where the mortality has been highest by the introduction of new stocks either of alleged resistant strains or of healthy, but of course susceptible, colonies from some district supposed to be free from infection. The result has generally been disastrous, and there are now many parts of England, where formerly there were hundreds of colonies, in which the industry of bee-keeping has been almost abandoned in despair and a honey bee is a rare insect.

What then is the remedy? Without conceding all the claims that bee-keepers have made as to the value of their charges in fertilising the blossom of fruit trees—for it must be admitted that in the absence of honey bees the work of pollination is performed by other insects—it is allowed that bee-keeping is an important national industry. The nectar in flowers, if not collected and turned into honey by bees, is lost to the service of man, and now more than ever it is desirable to accumulate and utilise every kind of food that can be produced at home.

At the same time, the individual bee-keeper is helpless. Even in the rare cases where he is a man of science, he has no means of effecting a cure if his bees are attacked; still less has he the means of preventing infection. The control, and where possible the eradication, of contagious disease is a matter for Government intervention, but the Bee Diseases Bill which was twice introduced into Parliament by the Board of Agriculture was abandoned owing to the active opposition of a certain section of the bee-keeping community. The Government can scarcely be blamed for relaxing its efforts to control the disease in view of the lukewarm support it has received from the persons who would have benefited had those efforts been successful. The only hope appears to be in the universities, the National Agricultural and Horticultural Societies, or in the last resort the wealthy benefactors, who might conjointly form a National Bee-keeping Institute for the improvement and development of the industry, the study of disease, and the improvement of the breeds of bees kept in the British Isles.

The lines on which further research should be conducted are more or less indicated by the results already achieved. The organism that causes microsporidiosis is known, its life-history is fairly well understood, and the conditions under which Nosema flourishes and the principal means of infection have been ascertained. What is now desired is a suitable treatment and a study of the conditions under which recovery can best be secured. It is, of course, unwise to reason too closely from analogous diseases in other animals, but it is at least possible that the investigations that are being made into amœbic dysentery in man may give some clue to the discovery of a method of dislodging the parasite from its home in the cells of the bee's stomach, or of paralysing the activities of the "planont" before they are able to effect their lodging there. At the present time scientific research in bee-keeping is almost at a standstill, and a new departure is needed. Is it too much to hope that some of those who have devoted themselves to the study of epidemic diseases in man should apply their experience in the service of a humble but useful form of husbandry?

NOTES.

WE learn from *Science* that Dr. R. A. Millikan is acting as the representative of the U.S. National Research Council in general charge of scientific questions referred to the council, that Dr. C. E. Mendenhall is in charge of the development of the various instruments used in connection with aeroplanes, and that Dr. A. Trowbridge has organised an important branch of scientific service for the U.S. Army in

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[1] "Handbuch der Bienenkunde," vol. ii.

France. The Carnegie Corporation of New York has voted an appropriation of 10,000*l*., or so much of that sum as may be necessary, to the Carnegie Institution of Washington to meet expenses incurred by the National Research Council during the war.

THE following committee to deal with problems either psychological, or having a psychological aspect, in connection with the war has been organised by the U.S. National Research Council: Messrs. J. McKeen Cattell, G. S. Hall, E. L. Thorndike, R. Dodge, S. I. Franz, G. M. Whipple, C. E. Seashore, J. B. Watson, and R. M. Yerkes.

ACCORDING to *Engineering* a Chemical Industries Bureau is in course of formation in Sweden, the object of which will be to bring together the Swedish chemical industrial interests, to keep in touch with changes and developments within its domain, and to further the special requirements of the chemical industry in its various branches.

THE fifth annual meeting of the Indian Science Congress will be held in Lahore on January 9 to 12 next, under the presidency of Dr. G. T. Walker, F.R.S., Director-General of Observatories. The sectional presidents will be:—Dr. L. Coleman (Agriculture), Dr. Wali Mahomed (Physics and Mathematics), Dr. G. J. Fowler (Chemistry), Dr. Choudhuri (Zoology and Ethnology), Mr. R. S. Hole (Botany), Mr. E. S. Pinfold (Geology). Dr J. L. Simonsen, of the Presidency College, Madras is the honorary secretary for the meeting.

SIR JOHN STIRLING-MAXWELL has undertaken the duties of Assistant Controller of Timber Supplies for Scotland.

WE regret to have to record the death, on August 18, of Prof. S. B. Kelleher, Erasmus Smith professor of mathematics in the University of Dublin.

THE death is announced, on July 27, of Dr. W. B. Clarke, professor of geology in the Johns Hopkins University, director of the Maryland State Weather Service, and State geologist for Maryland.

THE Charles P. Daly medal for geographical research has been awarded by the American Geographical Society to Mr. G. G. Chisholm, lecturer in geography in the University of Edinburgh. The inscription on the medal reads:—"To George Goudie Chisholm, scholar, teacher, author. Through sustained research and broad generalisation he has created a world-wide interest in the geographical basis of commerce."

THE David Livingstone centenary medal of the American Geographical Society has been awarded to Señor M. V. Ballivian, president of the Geographical Society of La Paz, Bolivia. The previous recipients of the medal are Sir Douglas Mawson and Col. Roosevelt.

A CATALOGUE of current journals dealing with chemistry and chemical industry, and the libraries in which they can be consulted in the United Kingdom, is being prepared by the Society of Chemical Industry. The journal list comprises about 5000 titles, and contains journals from well-nigh every country, almost all of which periodicals were, it is believed, current at the beginning of the war. Chemistry and chemical industry are treated in a very broad spirit, the list including journals dealing with all industries in which chemistry enters. Some 800 libraries will be listed, so that from the completed catalogue it is hoped that any chemist will be able to find the most convenient library in which he can consult any particular journal. The completion of the catalogue during the ensuing winter is aimed at.

THE Petroleum (Production) Bill introduced by Mr. Long in the House of Commons on August 15 may have proved a surprise to many, who probably had not realised that the discovery of petroleum in this country is possible; indeed, various favourable indications have long been evident. In no industry has there been such prodigious waste; there has been the rush of pioneers boring throughout a district where oil has been proved; there has been the frequent gush of oil which could not be dealt with, leading to losses of millions of gallons. With the possibility of the industry being established in this country we should profit by past experience gained in the rich oil-producing countries, and this Bill is to be heartily welcomed as an important step, providing as it does for investing in the Government all rights to get petroleum, and arranging for leases and defining petroliferous areas, payment of fixed royalties, and the general control through the Board of Trade. The Government thought it right, in view of possible adventurous schemes, to put the matter forward at once in order that unfortunate enterprises might be checked. Whilst private enterprise might undertake the exploratory borings, this is surely such a speculative business, and yet of such vast importance if expectations are realised, that it would appear desirable that the preliminary work at least should be liberally assisted, or entirely borne, by the National Exchequer.

DURING excavations at Horncastle a short time ago a human skeleton was discovered. The bones were in a very good state of preservation, and indicated that the body had been buried on its back, at full length. By its side were a long sword, a large spear, and a smaller one, all of iron. These have just been purchased for the Municipal Museum at Hull. The remains are of Anglo-Saxon date, and were probably brought to this country by the Angles, and as these people came largely from Angle-land, in the district now known as Sleswick, the relics may be said to relate to an early Teutonic invasion of Lincolnshire. The sword is remarkable for its length, is double-edged, and, though naturally slightly corroded, is in a very fair state of preservation. Its total length is 33 in., it is 1⅝ in. in width, and it tapers at the top in order to accommodate the handle. Quite apart from the archæological value of this collection, the sword is of particular value, as these weapons are very rarely found in Anglo-Saxon burials, though spears and other weapons are not uncommon. In his work on "The Industrial Arts of the Anglo-Saxons" Baron De Baye points out that the scarcity of swords is due to the fact that only individuals belonging to the upper classes were buried with this weapon, and that no doubt the swords were preserved as family treasures and left to heirs or friends.

IN the *Museum Journal* of the University of Pennsylvania (vol. vii., No. 4, December, 1916) is a reprint of an ancient Babylonian map showing part of the agricultural area of the city of Nippur, prepared about 1500 B.C. It throws a welcome light on an obscure provision in the celebrated law code of King Hammurabi. The map describes the custom of blowing a horn at the village gates to notify to the shepherds of the plains that the grazing season was over. Thus rural villages in which the people congregated for mutual defence appear to have been so arranged that the village buglers were able to make the shepherds and farmers hear the sound of the horn throughout the whole land of Babylonia.

IN the *Scientific Monthly* for July (vol. v., No. 1) Prof. Leo Rettger discusses some of the newer conceptions of milk in its relation to health. He emphasises the nutritional value of milk as milk, irrespective of whether it is whole, skim, sweet, or sour milk. Many persons have little or no tolerance for sweet milk, while sour milk, or buttermilk, is well borne. On account of the highly important known food substances which are present, namely, fat, sugar, casein, lactalbumin, and certain inorganic salts, and of the as yet poorly understood vitamines, or accessories, milk has a most stimulating influence on bodily growth and strength, and is therefore an important factor in regulating and preserving health.

THERE is considerable need for an "ink" for the skin for localisation marks. It should stain the skin such a colour that it will show up against iodine, be unaffected when rubbed with alcohol, ether, acetone, etc., last for some days under a dressing, and not damage or inflame the skin. Capt. Finzi gives the following formula, which fulfils all these requirements:—Acid. pyrogallic., 1 gram; acetone, 10 c.c.; liquor ferri perchlor. fort., 2 c.c.; sp. vini meth., ad 20 c.c. The mixture keeps well, and can be applied with a brush. The mark is brownish-grey at first, but after a few hours becomes a brilliant black (*Archives of Radiology and Electrotherapy,* No. 204, July, p. 38).

WE have received a copy of the report on explorations and field work of the Smithsonian Institution for 1916 (*Smithsonian Miscellaneous Collections,* vol. lxvi., No. 17). The volume contains short reports from about thirty investigators in geology, zoology, botany, archæology, ethnology, and astrophysics in various parts of the world, from the United States, Cuba, and Venezuela to South Africa and Borneo. The result of these investigations is to enrich the National Museum with material for exhibition and research. The outbreak of war practically cut off all the supply of animals for the National Zoological Park, as the trade was formerly almost wholly in German hands. The New York, Philadelphia, and National Zoological Parks sent a representative to South Africa, aided by a grant from the Smithsonian Institution, and he was successful in securing a certain number of ruminants, birds, and reptiles, chiefly from the Zoological Gardens at Pretoria. It should be noted that some of the excellent photographs in this volume are of permanent scientific value, although it claims to be only a summary of work done.

A VERY concise and admirable summary of the "Moults and Sequences of Plumages of the British Waders," by Miss Annie Jackson, appears in *British Birds* for August. This is apparently meant to serve as an introduction to a detailed description of the plumages of the several species on the British list, which will prove a very useful piece of work, since it will not only summarise what has already been written on this theme, but also include much original work by Miss Jackson. Only during recent years has this subject been seriously investigated, the earlier collectors caring for little but adult males in their nuptial dress. Hence it is that none of the great collections of skins examined in the course of the preparation of this paper contain skins of the oyster-catcher, stone-curlew, greenshank, or red-necked phalarope, showing the transition from the first winter to the first summer plumage. But these are only a few of many gaps in our knowledge of this matter which have yet to be filled.

IN a lecture published in the May issue of the Journal of the Royal Statistical Society Lord Dunraven advocates the nationalisation of the marine and fresh-water fisheries. He suggests that the State should take over these industries in the same way as it now controls or works others of national importance. Such Government acquisition, control, and development would, he expects, result in the cheapening of fish as food, and also in a very great increase of revenue, since the State would acquire the original and intermediate profits. The lines of development are suggested. Methods of preservation of fish by cold storage, salt curing, canning, and analogous processes should be applied on a large scale, and means of distribution of fresh fish should be greatly extended. Methods of "scientific fertilisation of fish-culture" should be practised on a very much broader basis than has hitherto been attempted. In this way the author hopes to see the fresh-water fisheries developed and salmon cheapened again to its original price of 4*d.* per lb. He advocates the removal of restrictions on methods of fishing and the re-opening of many days formerly closed to trawling, and generally urges the adoption of many of the recommendations of the Inshore Fisheries Committee of 1913.

M. JOHS. SCHMIDT contributes an interesting article on the occurrence of the wild hop in Denmark to the *Comptes Rendus des travaux du Laboratoire de Carlsberg* (1917, vol. ii., part 6). By the distribution of inquiry forms throughout the country a considerable mass of information was collected, especially from forest officials. This shows that the wild hop is commonest in Funen and most rare in West Jutland, but is not found on several small islands. The wild hop propagates by seeding as well as by the vegetative process. The seedlings grow slowly, do not flower the first year, and probably but rarely in the second. The flowering time at one locality in North Zealand was found to occur (1911–15) at the end of July or the beginning of August, the male plants commencing to flower somewhat earlier than the female. The hop has not hitherto been found in prehistoric deposits in Denmark, and it is therefore uncertain whether it existed there prior to human habitation. Generally the wild hop is of small value for brewing purposes, as it contains but little bitter resins. Some plants, however, were obtained which contained as much as 14 per cent. of this constituent. The same author has found that although the quality of "aroma" is absent from the male plant, it can nevertheless be transmitted to the offspring through the male parent. When an American male plant was crossed with a European female plant the offspring plants gave hops which exhibited typical "American" aroma.

WE have just received three recent parts of *Bergens Museums Aarbok,* published in 1915 and 1916. One of the most important articles is that by Prof. Nathorst on some plant remains found in the Hornelen district, at the mouth of Nordfjord. Since these contain *Thursophyton Milleri* they appear to be contemporaneous with the Middle Old Red Sandstone. The generic name Thursophyton is new. There are also new genera: Bröggeria, of very doubtful affinity, and Hyenia, a probable precursor of Sphenophyllum. Both as an introduction to this paper and as a separate article Dr. C. F. Kolderup describes the geology of the west coast district in which the plant-bearing sandstones occur. He also reports on earthquakes in Norway in 1913 and 1914. Zoological articles comprise a preliminary note on the pelagic Nemertines of the German South Polar Expedition, 1901–3, by Mr. August Brinkmann, and a report on the Alcyonarian and Madreporarian corals collected by the *Fram* and the *Michael Sars,* and now in Bergen Museum, by the late Prof. Jungersen. Mr. N. J. Foyn contributes a second report on the climate of Bergen. Volumetric analyses made in the neighbouring seas are communicated by Th. Hesselberg and H. U. Sverdrup, and T. Gaarder writes on oxygen in the fjords of Vestland.

It is not generally recognised that the common British ragwort (*Senecio Jacobaea*, L.) is poisonous to cattle. Such would appear to be probable, however, from cases which have recently been investigated in the veterinary laboratory of the Board of Agriculture, and form the subject of a note in the *Journal* of the Board fo. July. Under natural conditions the poisoning is a slow process, but with continuous doses the amount of poison which becomes available is sufficient in time to cause very serious symptoms, which often end in death. In one case quoted visible symptoms of poisoning were not observed until forty-four days after feeding on ragwort commenced. No cure has yet been devised, and prevention resolves itself into removing the ragwort from the forage or eradicating it from the pastures. The winter and early spring grazing of infested land with sheep has been recommended for this purpose, and has been practised apparently without harmful results. It would be unsafe, however, to conclude from this that sheep are immune to poisoning by ragwort, since there is reason to think that the flowering season—June to August—is the time of greatest danger. This aspect of the matter is receiving further attention.

The Journal of the Royal Agricultural Society of England for 1916 (vol. lxxvii.) presents the usual features of special articles, notes, and official reports, although for obvious reasons the number of special articles is somewhat curtailed in comparison with past volumes. Dr. Russell and Mr. E. H. Richards contribute an article on making and storing farmyard manure, which outlines various results of interest both for practice and for science obtained in recent investigations at Rothamsted. Attention is again directed to palm kernel cake and meal by Prof. C. Crowther, in a summary of existing information as to the nature, use, and merits of these materials as food for stock. An interesting article on the origin and characteristics of Welsh black cattle is contributed by Prof. C Bryner Jones. The annual reports of the scientific advisory officers of the society contain, as usual, many matters of interest, of which we may note Sir John McFadyean's account of results obtained at the Royal Veterinary College in the investigation of Johne's disease, and Mr. Cecil Warburton's summary of the present state of knowledge concerning the ox warble-fly.

Various matters of immediate interest to agriculturists are dealt with in Occasional Notes, No. 2 (July, 1917), issued by the Royal Agricultural Society. The general scope and arrangement of the opening number of this new series are retained, the various advisory officers of the society contributing the different sections into which the notes are classified. The notes are essentially practical, dealing, amongst other matters, with the growing of wheat, the raising of farm seeds, plant pests, motor tractors, and calf-rearing.

In the *Rendiconti del R. Istituto Lombardo*, vol. l. (2) 6, Prof. Torquato Taramelli discusses the origin of the deposits of sand found in the island of Sansego and other islands off the Istrian coast, and finds geological arguments in favour of Italy's claims to territory which is the scene of the present military operations. Among the numerous papers previously dealing with the geological features of the islands of the Quarnero basin many references occur to deposits of sand and red earth, but Prof Taramelli occupies himself mainly with the mass of sand overlying a calcareous base, which forms the island of Sansego. This island has a surface area of about three square kilometres and a circumference of about seven kilometres, and is the outermost island of the Quarnero archipelago. In its composition this sand is largely identical with that deposited by the river Po off the Italian coast, while nothing similar is to be found in the neighbouring Austrian mainland. It is thus inferred that in the Quaternary period the northern portions of the Adriatic were occupied by a vast river basin of Italian origin, and that the natural frontier of Italy, based on geological considerations, extends up to the confines of this basin.

Dr. L. F. Navarro contributes to the *Revue générale des Sciences*, 1917, p. 263, a most useful and interesting summary of what is known as to glacial phenomena in the Iberian peninsula. He points out that well-founded evidence of glaciation in this area, outside the Pyrenees and certain high chains, was brought forward for the first time by W. Halbfass so recently as 1912. The references to literature, including the author's own work, show how rapidly observation is progressing. No general mantle of ice has been traced, even in the Cordilleras; but a sheet of some magnitude, here called "*un grand inlandsis*," occurred in Leon. Two glacial episodes are recognised, corresponding to the Riss and Würm ages elsewhere in Europe. The author regards these as times when the present conditions in the peninsula were exaggerated in the direction of greater humidity and greater cold. Glacialists, however, are coming to the conclusion that no great demands need be made upon humidity, provided that there is a sufficiently low temperature.

The revolution—a milder word would be inadequate—in the position of the British optical industry is one of the commonplace changes brought about by the war, and it is not surprising to find that the new conditions are reflected in the growth of the Optical Society, which is now thoroughly representative of the industry and is rapidly becoming as fully representative of those whose interest in optics has been of a more theoretical character. Advantage has very appropriately been taken of the improved outlook to issue the society's Transactions at more frequent intervals and in a new form. The first number of the new series, of the same size as the Proceedings of the Royal Society, is chiefly occupied with a paper by Mr. J. W. French dealing with the grinding and polishing of glass. It is suggested that the processes involved are essentially different from those which apply in the polishing of metals. Evidence is brought forward to show that, in the process of grinding, glass is removed in consequence of the formation of conchoidal fractures originating at the points of contact of the glass and the abrasive, rather than by a ploughing action. Incidentally, an interesting method of grading partially worked surfaces is described. The first part of the polishing process consists in ploughing up the soft surface layer of the glass, which has a thickness of about eight wave-lengths, by coagulated lumps of the wetted polishing medium until all the material above the bottom of the deepest grooves has been removed. In the second part of the process, which begins when the water is allowed to dry up, the surface layer of the glass is liquefied by the pressure of the pitch tool and caused to flow until the surface becomes uniform. The paper is illustrated by a large number of excellent photomicrographs, and followed by a discussion in which alternative theories are suggested, and the views of some experienced glass-workers are given. The number is attractively printed, and gives an excellent start to a journal which should play a large part in establishing the optical industry of this country on a secure foundation, a task in which the Optical Society, where manufacturers and scientific workers are brought into intimate contact with one another, is eminently fitted to lead.

THE most recent contribution of the Bureau of Standards to the problem of the photometry of sources of light of different colours is Scientific Paper No. 299, by Messrs. Crittenden and Richtmyer, who have arrived at a number of general conclusions by collating the measurements made by more than a hundred observers. When two light sources of different colours, such as a carbon and a tungsten filament lamp, are compared by a photometer depending on a setting for equality of brightness, a considerable amount of practice is necessary before consistent results are obtained by any observer not specially trained. When a flicker photometer is used an observer of fair ability can readily get good results, but they differ from those given by the former method. The flicker photometer may give, *e.g.*, the candle-power of a tungsten lamp 3 per cent. less as compared with a carbon lamp than does an ordinary photometer. If the colour sensation of the observer differs from the normal, his comparison differs in consequence, but the authors find that the Ives-Kingsbury method of standardising the eye by the use of glass cells containing aqueous solutions of potassium bichromate 72 grams, and copper sulphate crystals 53 grams, to the litre respectively, interposed between the photometer and two equal sources of light, enables such an observer to get results identical with those obtained with a normal eye.

THE extent to which viscometers of various forms are now used for the classification and identification of oils and other liquids has led the Bureau of Standards to take up the question of a supply of standard liquids of known viscosities for the standardisation of viscometers. The investigation of the most suitable liquids has been carried out by Messrs. E. C. Bingham and R. F. Jackson, of the Bureau, who conclude that mixtures of 20, 40, and 60 per cent. by weight of ethyl alcohol in water, and solutions of sucrose in water containing 20, 40, or 60 per cent. by weight of sucrose, form the most suitable standard liquids. They give the viscosities and fluidities of these liquids at temperatures from 0° C. to 100° C. at intervals of 10° C. in a series of tables, and the variations of the fluidities with change of concentration and temperature are shown by a series of curves. The simple shapes of these curves suggest that it would be better to use the fluidity rather than its reciprocal the viscosity, in all calculations on the subject.

THE Tasmanian Government's Great Lake hydroelectric power undertaking, inaugurated in 1909 and opened last year, is described in the issue of the *Engineer* for July 27. It is based chiefly on a joint utilisation of two rivers—the Ouse and the Shannon—the latter having its source in the Great Lake and the former in what are known as the Ninety-nine Lagoons. The Great Lake lies at a level of 3250 ft. above the sea, and the lagoons are some 200 ft. higher. A curious feature of the two rivers is the great dissimilarity of their gradients, in spite of the fact that their sources are but a few miles apart, and their junction merely twenty miles or so downstream. At one point, about five miles south of the Great Lake, the Ouse is actually 1300 ft. below the Shannon. A dam has been built across the south end of the lake, giving an additional depth of 11 ft., and increasing the storage area from forty-two to fifty square miles. The catchment basin lies in the centre of the island, and is some 227 square miles in extent, and the annual precipitation of rain and snow is upwards of 60 in. By means of a diversion weir the water from the Shannon is turned into a canal, which serves a storage reservoir of 380 acres The power station is on the banks of the Ouse, and this river receives the exhaust water. The difference in level from reservoir to power station gives a net head of 1015 ft. of water, sufficient to develop a normal output of 4900 brake-horse-power in each of two turbines already installed. The installation has, in fact, proved so successful that an extension is now in hand. Although at present only serving the town of Hobart, the central position of the station renders it convenient for the transmission of power to any point in the island.

MESSRS. BERNARD QUARITCH, LTD., 11 Grafton Street, W.1, have issued a useful catalogue (No. 349) of rare and valuable books, comprising, among others, works dealing with Africa, America, Australia, entomology, ornithology, and physical and natural science. The same firm has purchased the existing stock of "Biologia Centrali-Americana," and has in preparation a detailed prospectus of the work.

OUR ASTRONOMICAL COLUMN.

THE COMMENCEMENT OF THE ASTRONOMICAL DAY.—In a letter to the *Observatory* for August the Astronomer Royal and Prof. H. H. Turner invite expressions of opinion from astronomers as to the desirability of adopting the civil day—*i.e.* the day commencing at midnight—in astronomical ephemerides; and, if thought desirable, as to the most suitable date for introducing the change. It has usually been considered convenient that observations made during the same night should all be of the same date, but this does not seem to them to balance the objection of having a time at variance with the civil reckoning. It is pointed out that the arrangement which is convenient for observations of stars is inconvenient for observations of the sun, and that the change would probably be welcomed by navigators. The only serious difficulty seems to be the discontinuity which would thus be introduced into astronomical records. A change of this kind could only come into operation after some time, as the national ephemerides are prepared several years in advance.

OBSERVATIONS OF MIRA CETI.—In *Ast. Nach.*, 4892, Prof. Nijland gives particulars of seventy-nine observations of Mira made at Utrecht between July 20, 1916, and February 15, 1917. The most probable date of minimum was July 24, when the star was of magnitude 9·4. The maximum occurred on November 8 (J. D. 2421176), the magnitude then being 3·75. The following is a summary of recent maxima observed by Prof. Nijland, together with a comparison with Guthnick's ephemeris:—

Maximum	Guthnick	Obs.-G.	Mag.	Period
J. D. 2420199	0209	−10*d*	3·35	
0527	0539	−12	3·8	328*d*
0852	0870	−18	3·5	325
1176	1201	−25	3·75	324

ECLIPSING VARIABLES.—A further important contribution to the study of eclipsing variables has been made by Prof. H. N. Russell in collaboration with Mary Fowler and Martha C. Borton (*Astrophysical Journal*, vol. xlv., p. 306). The observational data were provided by the Harvard Observatory in the form of 2101 observations of the photographic brightness of the six eclipsing variables, W Delphini, U Sagittæ, S Cancri, RW Tauri, SW Cygni, and W Ursæ Majoris. The resulting light-